SITE CONDITION SURRENDER REPORT

COMPLETE SECTIONS 1-3 AND SUBMIT WITH APPLICATION

DURING THE LIFE OF THE PERMIT: MAINTAIN SECTIONS 4-7

AT SURRENDER: ADD NEW DOC REFERENCE IN 1.0; COMPLETE SECTIONS 8-10; & SUBMIT WITH YOUR SURRENDER APPLICATION.

V2.0 4 August 2008

1.0 SITE DETAILS	
Name of the applicant	Lighthouse Green Fuels Ltd
Activity address	Tees Valley 2 Renewable Energy Facility, Reclamation Pond, Huntsman Drive, Stockton-on-Tees, TS2 1TT
National grid reference	NZ 51915, 22792

Document reference and dates for Site Condition Report at permit application and surrender	TPLSCSR2 05/10/26 The SCR submitted with the original permit application – Site Condition Report August 2013

Document references for site plans (including location and boundaries)	See – "Site Plan"

Note:
In Part A of the application form you must give us details of the site's location and provide us with a site plan. We need a detailed site plan (or plans) showing:

- Site location, the area covered by the site condition report, and the location and nature of the activities and/or waste facilities on the site.
- Locations of receptors, sources of emissions/releases, and monitoring points.
- Site drainage.
- Site surfacing.

If this information is not shown on the site plan required by Part A of the application form then you should submit the additional plan or plans with this site condition report.

2.0 Condition of the land at permit issue	
Environmental setting	**Location and Current Land Use** Tees Valley 2 Renewable Energy Facility (REF) is approximately 2km to the north of South Bank, 2.5km to the east of Port Clarence and 4.5km to the east of Billingham. The Site is located on the 'Reclamation Ponds' which is in the Seal Sands Area on the north bank of the River Tees. The 'Reclamation Ponds' is an area of former ponds which have been reclaimed in four phases by controlled infilling to enable development of the area. Phases 1 and 2 were completed prior to 2011 and Phase 3 in 2011. The Site is to be located in Phase 2 and will occupy approximately 6.6 hectares. The Site currently comprises an undulating surface left by infilling at an approximate elevation of 5.5 to 6.01m above ordnance datum (AOD) and is covered by scrub vegetation. This facility is yet to be constructed. **Surrounding Land Use** The Site is bounded to the north by a culverted waterway with open land of Phase

	4 beyond to the northwest and open water of Phase 4 (Reclamation Pond) beyond to the northeast. Tees Valley REF (TV1) is adjacent to the east with the North Tees Works petro-chemical facility (operated by SABIC) approximately 300m to the east and Sabic North Tees Logistics approximately 400m to the southeast. Huntsman Drive is adjacent to the south with Port Clarence Landfill, a hazardous waste landfill operated by Augean, approximately 200m beyond to the south. Open land to be developed by Impetus is adjacent to the west and Dorman's Pool approximately 200m to the west. This is part of the Tees and Hartlepool Foreshore and Wetlands Site of Special Scientific Interest (SSSI). **Geology** British Geological Survey (BGS) sheet number 33 of Stockton shows the Site to be underlain by Holocene Tidal Flats (Superficial Deposits) resting on Mercia Mudstone. However, the Site was reclaimed from the River Tees and information indicates that the Site is underlain by Made Ground comprising colliery spoil and blast furnace slag. There is only geo-environmental assessment data available for Phase 3 to the east but it has been assumed that the Site (Phase 2) will exhibit similar ground conditions. This assumption is considered reasonable because the Reclamation Pond development was originally reclaimed at the same time. On that basis, the Site is likely to be underlain by approximately 0.6m of ashy, silty topsoil resting on up to 10m of brick, concrete, slag, ash and clinker. The Made Ground is underlain by Superficial Deposits including Clayey Sand and Sand/Silt/ Clay between 6.4 and 35m below ground level (bgl). This rests on Sand between 24 and 40mbgl which is underlain by Clay between 28 and 35mbg. Bedrock (Mercia Mudstone) has been encountered between 32.3 and +50mbgl . **Hydrogeology** The Environment Agency Aquifer Designation Maps (http://maps.environment-agency.gov.uk) indicate the Site is underlain by a Secondary B Aquifer (Mercia Mudstone). Secondary B Aquifers consist of predominantly lower permeability layers which may store and yield limited amounts of groundwater because of localised features such as fissures, thin permeable horizons and weathering. Overlying Superficial Deposits are considered a Secondary Undifferentiated Aquifer. This classification is assigned where it has not been possible to attribute either category A or B to a rock type and in most

	cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations because of the variable characteristics of the rock type. There is only geo-environmental assessment data available for Phase 3 to the east but it has been assumed that the Site (Phase 2) will exhibit similar ground conditions. On that basis, perched water may be present as isolated lenses in Made Ground, although a Mott MacDonald Site Investigation to the north of the Site in 2008 and reported by Grontmij showed water levels between 4 and 6mbgl in the Made Ground. These levels were similar to surface water levels in the Reclamation Pond and surrounding water bodies. It could be inferred that water flow in Made Ground underlying the Site would be in a northerly direction towards the Reclamation Pond. The Site is not located within a groundwater Source Protection Zone (SPZ) but there are five licensed, groundwater abstractions within 1km, the closest being approximately 350m to the northeast and licensed to Impetus Reclamation Ltd associated with the North Tees Oil Refinery. The abstraction is taken from the Mercia Mudstone for 'General' use. **Hydrology** A number of surface water bodies are present within the vicinity of the Site. The nearest is the Reclamation Pond adjacent to the northeast. Previous investigations of the Tees Valley REF to the east suggest that water quality within Reclamation Pond is poor. Dorman's Pool is approximately 200m to the west and is connected to Reclamation Pond via an outfall system which forms the north Site boundary. The River Tees is approximately 400m to the southeast and 600m to the south and is connected to Reclamation Pond via an outfall in the southwest corner of the Tees Valley REF (TV1) to the east. No river quality data exists for the River Tees downstream of the Tees Barrage. No current, licensed surface water abstractions have been identified within 500m of the Site. No current discharge consents have been identified within 500m of the Site. The Site is not shown to be located in an area at risk of flooding. **Ecology** Statutory and non-statutory conservation designations have been identified within 1km of the Site, including the Tees and Cleveland Coast RAMSAR and Special Protection Areas (SPA) and Tees and Hartlepool Foreshore and Wetlands Site of SSSI, both within 500m.
Pollution history	The Reclamation Pond was created by the

	incomplete backfilling of cells created by the historical placement of slagfingers. This is the process of depositing slag in lines spanning out from a central point and then infilling between these lines. Anecdotal evidence suggests that the pond was subject to a hydrocarbon spill from the ICI chemical plant in the 1980s. The pond was subsequently remediated and it is understood surface water sampling has continued since that time. Anecdotal evidence suggests that the Reclamation Pond was historically used for discharge of runoff and effluent from the North Tees refinery.
Evidence of historic contamination	The Site was reclaimed from the River Tees in the early 20th century (1899 to 1916) by placement of blast furnace slag and colliery spoil. The site owner had planning approval (01/2203/P) to reclaim the Reclamation Pond development for industrial (class B2) uses to be achieved through cut and fill earthworks using site-won and imported material. It is assumed that the remediation works have been completed in accordance with the Remediation Strategy, to the satisfaction of the relevant regulatory bodies and that the Site comprises a development platform suitable for the proposed end-use.
Baseline soil and groundwater reference data	Completion of remediation works in accordance with the Remediation Strategy, to the satisfaction of the relevant regulatory bodies will be the baseline Site condition for the proposed scheme for the purposes of this assessment.
Supporting information	BGS: 1:50,000 Scale Geological Map Sheet 33, Stockton (Solid and Drift) Grontmij: Impetus Reclamation Limited: Reclamation Pond Remediation Strategy, December 2008 WSP Environmental UK: Geo-environmental Review: Reclamation Pond Site, June 2009 Atkins Limited: Air Products Phase 1 Geo-environmental Report, June 2010 Grontmij: Materials Recycling Facility, Reclamation Ponds, Materials Recycling Facility, Planning Application Scoping Report, December 2011. http://maps.environment-agency.gov.uk Atkins Limited: Phase 3 Area of the Impetus Reclamation Pond Site, Stockton on Tees, Geo-environmental Interpretive Report, March 2012 Landmark Information Group: Envirocheck Report Ref 41732740_1, October 2012 Atkins Limited: Tees Valley 2 Renewable Energy Facility, Environmental Statement, March 2013

3.0 Permitted activities	
Permitted activities	**Operations** Permitted activities will comprise the REF which will include an oxygen assisted plasma gasification technology to process residual municipal and commercial/industrial waste

	from the adjacent Impetus MRF to the west, which has been pre-processed with recyclables removed. The facility will be designed to treat approximately 950 tonnes per day of pre-processed feedstock which will generate up to 49.8 Mega Watts (MW) of green electricity. The facility will comprise a Material Storage and Handling Facility, Plasma Gasification Plant, Synthetic Gas Clean-up System and Power Generation Plant. The facility will process up to 350,000 tonnes per annum of pre-processed waste comprising, municipal solid waste (MSW) with metal, glass and plastic removed. This feedstock will be delivered to the Site by conveyor from the adjacent Impetus MRF and introduced into the top of a vertical cylindrical gasifier, together with metallurgical coke and limestone fluxant. The materials will move downward in the gasifier and be heated by plasma torches to temperatures in excess of 1,200ºC, converting thecarbon content of the feedstock to a syngas containing, among otherconstituents, carbon monoxide and hydrogen. Most of the carbon in the feedstock will react with controlled amounts of oxygen introduced immediately above the plasma torches to produce the carbon monoxide. Some of the carbon will react with water in the feedstock or steam introduced into the gasifier to produce hydrogen. The syngas will be partially quenched as it exits from the top of the gasifier vessel. Inorganic and inert materials will exit the bottom of the gasifier as slag, which will be quenched in a water bath. The syngas will then be fed through a series of process operations to further quench, scrub, cool, compress and remove particulates, hydrogen chloride and other acid gases, ammonia, sulphur, and mercury to make it suitable as fuel for three combustion gas turbines. Syngas will feed into the Power Generation Plant which will include two combustion gas turbines, each with its own heat recovery steam generator (HRSG) and one steam turbine generator and an auxiliary boiler. The gas turbine generators will produce electricity and the heat from each turbines exhaust will be recovered as steam in the HRSG. The exhaust gas will be catalytically treated using SCR to remove nitrogen oxides. The steam produced will be delivered to a steam turbine generator to produce additional electric power. Resultant electricity will be delivered to the distribution system operator and it is anticipated this will be via a proposed connection to the North Tees Works substation.

	Site Layout The site layout of the renewable energy facility is presented on Figure 2. The key buildings are listed below: Guardhouse and weighbridge. Control and administration building and associated staff and visitor parking (50 spaces). Materials storage & handling facilities. Oil storage building. Electrical building and associated substation. Main substation and motor control centre. **Materials Storage** The gasifier operation processes three solid materials comprising the pre-processed feedstock (waste), limestone and metallurgical coke/anthracite. The material handling and storage systems will receive and process these materials at the facility. Materials Storage will include unloading facilities, receiving pits, day bins, conveying and waste shredding, metallurgical coke/anthracite and fluxant truck unloading, storage silos and coarse crushing. The incoming feedstock will be directed by conveyor from the Impetus MRF to three storage bunkers. The bunkers will be sealed and under negative pressure, with a roll-up shutter door. Exhaust air will be treated to minimize the potential for fugitive emissions or odour. An unloading shed in the centre-north of the Site will house a limestone and metallurgical coke/anthracite receiving hopper. Loads of limestone and metallurgical coke will be discharged via walking floor lorries and then to a conveying system to facilitate transferring the material to storage silos. The limestone and metallurgical coke/anthracite will be stored in two 37m high, long term storage silos designed to hold approximately 5-days of material at the highest gasification rate. A dust collection system will be utilised to ensure fugitive dust emissions are minimised from the unloading shed, receiving hopper, and vibratory feeders. The silos will be equipped with an open bottom bin vent filter to prevent dust from escaping to the atmosphere during unloading operations; any captured dust will be reintroduced into the silos for reuse. An oil storage enclosure will be located on the eastern boundary of the Site. The enclosure will be three-sided with portal frame and clad construction with reinforced concrete floor slabs to prevent emissions to land and groundwater. It will be utilised to store oil and lubricant required for maintenance of the process equipment. Water treatment and boiler feed water chemical units will be provided to treat and dose industrial raw water and

	process feeds. This will comprise a water filtration package, demineralisation system and boiler feed water chemical package. The enclosure for this system is located centrally within the site. Building floor slabs will be reinforced concrete to prevent emissions to land and groundwater. All storage areas will be appropriately bunded with spillage collection. All deliveries will be supervised. The feedstock acceptance operations will be monitored from the spotter/receiving office. **Waste** The main waste streams will be vitrified slag from the gasification process, sulphur cake from the sulphur removal unit, small quantities of waste maintenance and hydraulic oil and occasional spent catalysts from the hydrolysis plant and SCR unit. All wastes will be segregated to maximise the potential for recovery or recycling as well as ensuring the appropriate disposal route, if applicable. All wastes will be stored in dedicated areas. Filter cake and particulates separated from the scrubbing water and wastewater will be recycled back to the gasifier feed. Filter cake from wastewater treatment is recycled to the gasifier as a component of the fuel mix. Slag will be sent to the landlord for reuse in the aggregates industry. Sulphur cake will be reused if possible, depending on quality, or if necessary disposed of to landfill. Waste oils will be sent off site in accordance with Duty of Care requirements for recycling, using a specialist oil contractor. Mercury saturated carbon bed will be tested annually and returned to the supplier as a preference or disposed to hazardous landfill as a last resort. **Water** A supply of water will be required for boiler feed-water makeup, potable water, cooling water, filter backwashes and process water. The tank service will be combined raw water/firewater storage and maintained full on level control from the Northumbrian Water supply pipeline. **Wastewater** The facility will incorporate a wastewater treatment system consisting of four components to treat process waste water, dirty waste water, sanitary waste water and clean storm water: The process waste water system will pre-treat wastewater prior to being sent off-site to an industrial wastewater treatment facility. The system will manage liquids from the scrubber system and other wastewater streams that have direct contact with the syngas.

	Wastewater such as boiler and cooling tower blowdown waters and rainwater which does not come into contact with the syngas will be treated as required in the dirty waste water system which will be discharged to the adjacent Reclamation Pond drainage channel before flowing to the River Tees. Foul sewerage generated from operations will be collected in the sanitary sewer system and pumped to an offsite waste water treatment facility. Clean surface runoff from storm water will drain through the porous development platform. **Environmental and Management Controls** Measures to prevent emissions to air, water and land will be BAT. The plant will be operated by a dedicated on-site team. They will have the required skills and experience to operate the plant in a safe manner. Methods will be in place to ensure spill risks are appropriately managed during the receipt, transfer, use and disposal of polluting substances and discharges. Furthermore, the Site will operate with emergency plans in place and risks to land/water during the operation of the Site will be mitigated. Site management procedures will include procedures to minimise environmental impact during accidents and include preventative and control measures to prevent accidents. The Operator will establish a formal management programme which identifies, sets, monitors and reviews environmental objectives and targets and key performance indicators independent from the Permit. All emissions to surface water will be controlled and include treatment, as appropriate and monitoring. In abnormal operation (i.e. in the result of an accident or incident), measures will be in place to prevent accidents that could lead to such emissions and mitigate their environmental consequences if they do occur. There are no anticipated emissions to land or groundwater from the installation during normal operation. In abnormal operation (i.e. in the result of an accident or incident), measures will be in place to prevent accidents that could lead to such emissions and mitigate their environmental consequences if they do occur. There will be yearly planned outages for maintenance including an annual outage of about a week for inspections and minor maintenance. A maintenance team will be available should any problems arise. The maintenance system will be subject to the Operator's internal auditing programme. The maintenance system to be implemented will include regular checks and formal

	inspections of 'static' items such as tanks, pipework, retaining walls, bunds and ducts. Audit reports and recommendations will be reported to senior management on a regular basis. Appropriate documented procedures will be implemented for environmentally critical plant, equipment and operations, whose failure could lead to adverse impact on the environment. Appropriate monitoring regimes will be established and implemented, once the Permit has been issued, to ensure that the conditions of the Permit are attained. These regimes will cover air, water, wastewater, sewer and waste emissions. Detailed operating procedures, that include housekeeping measures, will be written in the lead up to the plant accepting first waste. These will be available for inspection and approval as necessary, as a pre-condition to accepting first waste. The plant will be supervised by staff that is suitably trained and fully conversant with the requirements of the Permit. The Operator will provide all personnel with appropriate training to ensure that environmental objectives and targets are met and that all staff is familiar with those aspects of the Permit conditions that are relevant to their duties. Design and implementation of the accident plan will be subject to periodic review and will be reviewed in light of any environmental accidents, incidents, near misses and identified potential scenarios to ensure that it remains appropriate to the nature and scale of the activities of the installation. **Summary** The environmental risk assessment for the proposed permitted activities is presented in the Environmental Permit Application. Potentially polluting substances are to be used and activities carried out at the Site. However, based on the pollution prevention measures to be adopted, for all the relevant activities at the installation, there is little likelihood that land pollution or leaks to the land will occur during the future life of the Site. Prior to development, the Site was a Reclamation Pond, created by the incomplete backfilling of cells created by the historical placement of slagfingers. The site owner had planning approval (01/2203/P) to reclaim the Reclamation Pond development for industrial (class B2) uses to be achieved through cut and fill earthworks using site-won and imported material. It is assumed that the remediation works have been completed in accordance with the Remediation Strategy, to the satisfaction of the relevant regulatory bodies and have provided a development platform which is suitable for the proposed

	end-use Taking this into consideration and the low likelihood that land pollution or leaks to the land will occur during the future operation of the Site, it is not considered that a specific baseline for the condition of the Site (soil and groundwater), over and above the investigations already carried out, is required prior to commencement of the permitted activities.
Non-permitted activities undertaken	Not applicable
Document references	Not applicable

4.0 Changes to the activity	
Have there been any changes to the activity boundary?	
Have there been any changes to the permitted activities?	
Have any 'dangerous substances' not identified in the Application Site Condition Report been used or produced as a result of the permitted activities?	
Checklist of supporting information	• Plan showing any changes to the boundary (where relevant) • Description of the changes to the permitted activities (where relevant) • List of 'dangerous substances' used/produced by the permitted activities that were not identified in the Application Site Condition Report (where relevant)

5.0 Measures taken to protect land	
Checklist of supporting information	• Inspection records and summary of findings of inspections for all pollution prevention measures • Records of maintenance, repair and replacement of pollution prevention measures

6.0 Pollution incidents that may have had an impact on land, and their remediation	
Checklist of supporting information	• Records of pollution incidents that may have impacted on land • Records of their investigation and remediation

7.0 Soil gas and water quality monitoring (where undertaken)	
Checklist of supporting information	• **Description of soil gas and/or water monitoring undertaken** • **Monitoring results (including graphs)**

8.0 Decommissioning and removal of pollution risk

The site has not been decommissioned as never operated.

Checklist of supporting information	• **Site closure plan** • **List of potential sources of pollution risk** • **Investigation and remediation reports (where relevant)**

9.0 Reference data and remediation (where relevant)

No reference data and/or remediation data available as never operated.

Checklist of supporting information	• Land and/or groundwater data collected at application (if collected) • Land and/or groundwater data collected at surrender (where needed) • Assessment of satisfactory state • Remediation and verification reports (where undertaken)

10.0 Statement of site condition

Using the information from sections 3 to 7, give a statement about the condition of the land at the site. This should confirm that:

- the permitted activities have stopped
- decommissioning is complete, and the pollution risk has been removed
- the land is in a satisfactory condition.

Facility never operated. The land is in a satisfactory condition.